

## § 434.301

## 10 CFR Ch. II (1–12 Edition)

*Thermal transmittance, overall* ( $U_o$ ): the gross overall (area weighted average) coefficient of heat transfer from air to air for a gross area of the building envelope, Btu/(h·ft<sup>2</sup>·°F). The  $U_o$  value applies to the combined effect of the time rate of heat flows through the various parallel paths, such as windows, doors, and opaque construction areas, composing the gross area of one or more building envelope components, such as walls, floors, and roof or ceiling.

*Thermostat*: an automatic control device responsive to temperature.

*Unconditioned space*: space within a building that is not a conditioned space. (See “conditioned space”)

*Unitary cooling equipment*: one or more factory-made assemblies that normally include an evaporator or cooling coil, a compressor, and a condenser combination (and may also include a heating function).

*Unitary heat pump*: one or more factory-made assemblies that normally include an indoor conditioning coil, compressor(s), and outdoor coil or refrigerant-to-water heater exchanger, including means to provide both heating and cooling functions.

*Variable-air-volume (VAV) HVAC system*: HVAC systems that control the dry-bulb temperature within a space by varying the volume of heated or cooled supply air to the space.

*Vent damper*: a device intended for installation in the venting system, in the outlet of or downstream of the appliance draft hood, of an individual automatically operating gas-fired appliance, which is designed to automatically open the venting system when the appliance is in operation and to automatically close off the venting system when the appliance is in a standby or shutdown condition.

*Ventilation*: the process of supplying or removing air by natural or mechanical means to or from any space. Such air may or may not have been conditioned.

*Ventilation air*: that portion of supply air which comes from the outside, plus any recirculated air, to maintain the desired quality of air within a designated space. (See also “outdoor air”)

*Visible light transmittance*: the fraction of solar radiation in the visible

light spectrum that passes through the fenestration (window, clerestory, or skylight).

*Walls*: those portions of the building envelope enclosing conditioned space, including all opaque surfaces, fenestration, and doors, which are vertical or tilted at an angle of 60° from horizontal or greater. (See also “roof”)

*Wall heat capacity*: the sum of the products of the mass of each individual material in the wall per unit area of wall surface times its individual specific heat, expressed in Btu/(ft<sup>2</sup>·°F). (See “thermal mass”)

*Window to wall ratio (WWR)*: the ratio of the wall fenestration area to the gross exterior wall area.

*Zone*: a space or group of spaces within a building with any combination of heating, cooling, or lighting requirements sufficiently similar so that desired conditions can be maintained throughout by a single controlling device.

## Subpart C—Design Conditions

### § 434.301 Design criteria.

301.1 The following design parameters shall be used for calculations required under subpart D of this part.

301.1.1 *Exterior Design Conditions*. Exterior Design Conditions shall be expressed in accordance with Table 301.1.

TABLE 301.1—EXTERIOR DESIGN CONDITIONS

Winter Design Dry-Bulb (99%).	.....	Degrees F.
Summer Design Dry-Bulb (2.5%).	.....	Degrees F.
Mean Coincident Wet-Bulb (2.5%).	.....	Degrees F.
Degree-Days, Heating (Base 65).	.....	HDD Base 65 °F.
Degree-Days, Cooling (Base 65).	.....	CDD Base 65 °F.

## Department of Energy

## § 434.401

TABLE 301.1—EXTERIOR DESIGN CONDITIONS—  
Continued

Annual Operating Hours, 8 a.m. to 4 p.m. when 55°F ≤ T ≤ 69 °F.	.....	Hours.
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[The exterior design conditions shall be added to Table 301.1 from the city-specific Shading Coefficient table from appendix A of RS-1 (incorporated by reference, see § 434.701). Copies of specific tables contained in appendix A of RS-1 (incorporated by reference, see § 434.701) can be obtained from the Energy Code for Federal Commercial Buildings, Docket No. EE-RM-79-112-C, EE-43, Office of Building Research and Standards, U.S. Department of Energy, Room 1J-018, 1000 Independence Avenue, SW., Washington, DC 20585, (202) 586-9127. Adjustments may be made to reflect local climates which differ from the tabulated temperatures or local weather experience as determined by the building official. Where local building site climatic data are not available, climate data from a nearby location included in RS-1, appendix C, (incorporated by reference, see § 434.701) and RS-4 Chapter 24, Table 1, (incorporated by reference, see § 434.701) shall be used as determined by the building official.]

301.2 *Indoor Design Conditions.* Indoor design temperature and humidity conditions shall be in accordance with the comfort criteria in RS-2 (incorporated by reference, see § 434.701), except that humidification and dehumidification are not required.

### Subpart D—Building Design Requirements—Electric Systems and Equipment

#### § 434.401 Electrical power and lighting systems.

Electrical power and lighting systems, other than those systems or portions thereof required for emergency use only, shall meet these requirements.

##### 401.1 *Electrical Distribution Systems.*

401.1.1 *Check Metering.* Single-tenant buildings with a service over 250 kVA and tenant spaces with a connected load over 100 kVA in multiple-tenant buildings shall have provisions for check metering of electrical consumption. The electrical power feeders for which provision for check metering is required shall be subdivided as follows:

401.1.1.1 Lighting and receptacle outlets

401.1.1.2 HVAC systems and equipment

401.1.1.3 Service water heating (SWH), elevators, and special occupant equipment or systems of more than 20 kW.

401.1.1.4 Exception to 401.1.1.1 through 401.1.1.3: 10 percent or less of

the loads on a feeder may be from another usage or category.

401.1.2 Tenant-shared HVAC and service hot water systems in multiple tenant buildings shall have provision to be separately check metered.

401.1.3 Subdivided feeders shall contain provisions for portable or permanent check metering. The minimum acceptable arrangement for compliance shall provide a safe method for access by qualified persons to the enclosures through which feeder conductors pass and provide sufficient space to attach clamp-on or split core current transformers. These enclosures may be separate compartments or combined spaces with electrical cabinets serving another function. Dedicated enclosures so furnished shall be identified as to measuring function available.

401.1.4 *Electrical Schematic.* The person responsible for installing the electrical distribution system shall provide the Federal building manager a single-line diagram of the record drawing for the electrical distribution system, which includes the location of check metering access, schematic diagrams of non-HVAC electrical control systems, and electrical equipment manufacturer's operating and maintenance literature.

401.2 *Electric Motors.* All permanently wired polyphase motors of 1 hp or more shall meet these requirements:

401.2.1 *Efficiency.* NEMA design A & B squirrel-cage, foot-mounted, T-frame induction motors having synchronous speeds of 3600, 1800, 1200, and 900 rpm, expected to operate more than 1000 hours per year shall have a nominal full-load efficiency no less than that shown in Table 401.2.1 or shall be classified as an "energy efficient motor" in accordance with RS-3 (incorporated by reference, see § 434.701). The following are not covered:

(a) Multispeed motors used in systems designed to use more than one speed.

(b) Motors used as a component of the equipment meeting the minimum equipment efficiency requirements of subsection 403, provided that the motor input is included when determining the equipment efficiency.